CLAIMS

1. A method of growing a semiconductor layer structure, the method comprising the steps of:

growing a first (Al,Ga)N layer over a substrate at the first substrate temperature by MBE using ammonia as the nitrogen precursor;

cooling the substrate to a second substrate temperature lower than the first substrate temperature, while maintaining the supply of ammonia to the substrate;

growing an (In,Ga)N quantum well structure over the first (Al,Ga)N layer by MBE using ammonia as the nitrogen precursor;

heating the substrate to a third substrate temperature higher than the second substrate temperature, while maintaining the supply of ammonia to the substrate; and

growing a second (Al,Ga)N layer over the quantum well structure at the third substrate temperature by MBE using ammonia as the nitrogen precursor.

2. A method as claimed in claim 1 wherein the first (Al,Ga)N layer has a first conductivity type.

3. A method as claimed in claim 2 wherein the second (Al,Ga)N layer has a second conductivity type different from the first conductivity type.

4. A method as claimed in claim 3 wherein the first (Al,Ga)N layer is doped n-type and the second (Al,Ga)N layer is doped p-type.

5. A method as claimed in any preceding claim wherein the first substrate temperature is within the range 850°C to 1050°C.

6. A method as claimed in any preceding claim wherein the second substrate temperature is within the range 650°C to 1000°C.

7. A method as claimed in any preceding claim wherein the third substrate temperature is within the range 850°C to 1050°C.

8. A semiconductor layer structure grown by a method as defined in any of claims 1 to 7.

9. A semiconductor light-emitting device comprising a semiconductor layer structure grown by a method as defined in any of claims 1 to 7.

10. A semiconductor device as claimed in claim 9 wherein the device is a light-emitting diode.